LAND USE

Land use in each ACEC town is mainly categorized as forest, wetland, agriculture, and residential (Figure 18). Agricultural use is primarily in the form of cropland, pasture, horse farms, and dairy farms. Residential land consists mainly of low to medium density single-family dwellings.
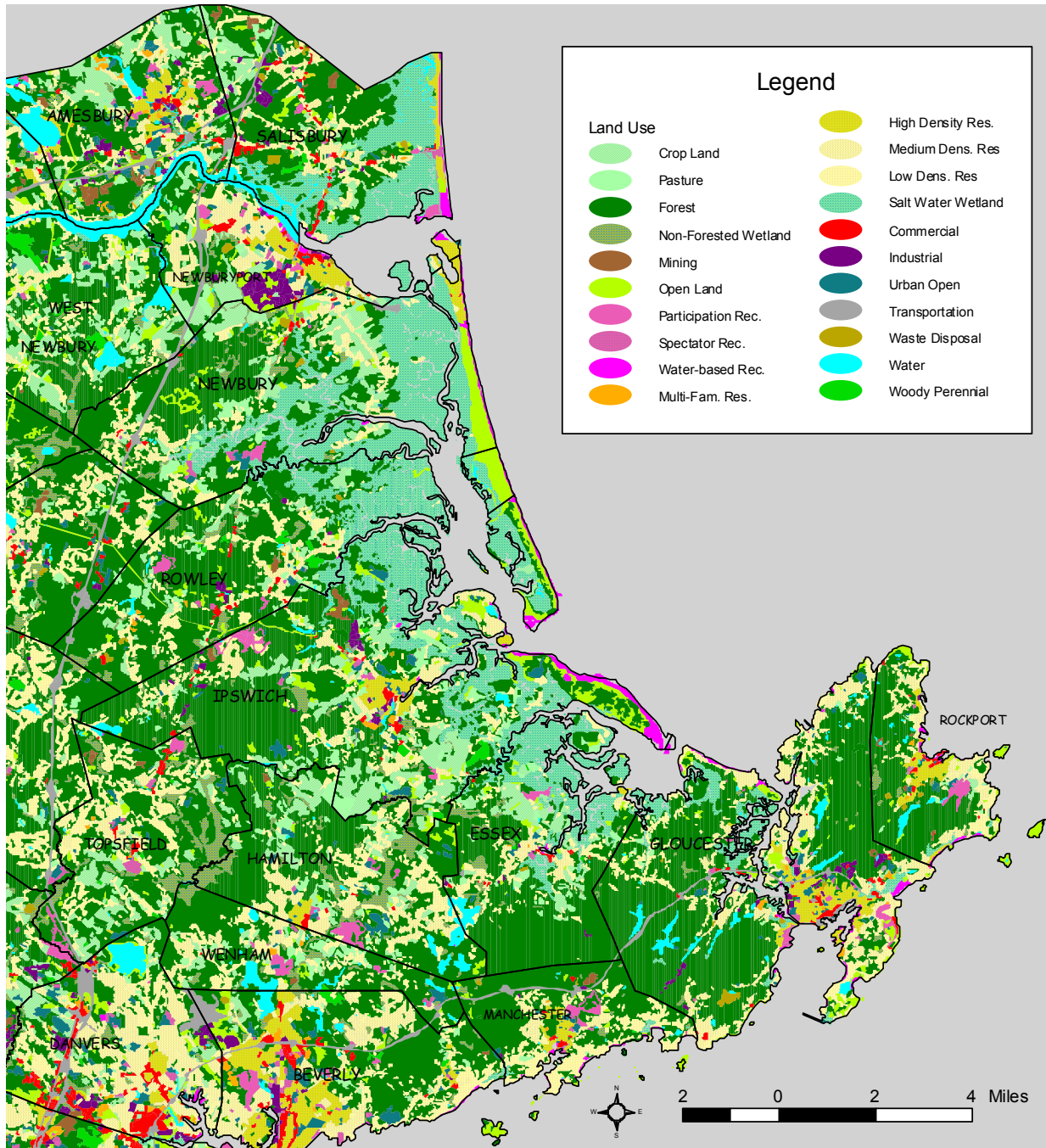

Figure 18. Land use

Over the last 15 years, ACEC towns have all experienced significant population growth. Based on Massachusetts Executive Office of Environmental Affairs (EOEA) buildout analysis, population and development in each of the ACEC towns is projected to increase (Table 14). (*Results for Newbury were estimated as part of the Minibay study (1996) while Rowley, Ipswich, Essex, and Gloucester estimates were derived from the 1999-2000 EOEA buildout analysis*).

Table 14. Projected population growth in ACEC towns		
Town	**Residents (1998/99)**	**Projected Buildout Populations**
Newbury	6,970	11,896
Rowley	5,343	11,395
Ipswich	12,768	22,833
Essex	3,566	11,852
Gloucester	29,252	38,961

"Human activities in rivers and watersheds have altered enormously the timing, magnitude, and nature of inputs of materials such as water, sediments, nutrients, and organic matter to estuaries" (Woods Hole MBL 1999). From 1992 to 1996, the Woods Hole MBL Ecosystem Center studied landscape effects on the Plum Island Sound marine ecosystem. As part of the Land Margin Ecosystem Research Program (LMER), this study focused on linkages between terrestrial and marine ecosystems. The goals of the study were to: 1) measure the quantity of dissolved and particulate organic carbon and organic nitrogen entering coastal waters from surrounding lands, 2) conduct experiments to determine the effects of various nutrient and organic matter inputs and interactions on the flow and recycling of carbon and nitrogen through pelagic and benthic food webs including higher trophic levels, and 3) model food chain transformations and the effects of changes in land use and land cover (Woods Hole MBL 1997). *To see results from this study, visit the LMER website at http://www.mbl.edu/html/ECOSYSTEMS/lmer/plumisla/plumisla.html.*

CZM is beginning a pilot project in the Parker River Watershed to develop an innovative monitoring and analysis framework to link land use/cover, chemical and biological aquatic resource data, and nonpoint source (NPS) pollution controls. This framework will allow coastal managers to: 1) assess the effectiveness of NPS control measures in protecting and restoring the condition of coastal aquatic resources, including estuarine/riverine waters and salt marsh habitat; 2) identify relationships between land side development patterns and practices and corresponding aquatic resource quality or integrity; and 3) determine specific areas which may be at risk or where monitoring stations should be developed. The framework will include the following tasks:
- Analysis of land use trends over the past 15 years.
- Compilation of historic and current water and habitat quality data.
- Detailed analysis of specific land cover and habitat type attributes.
- Descriptive indices to characterize the condition of coastal aquatic resources.
- Assessment of stormwater management practices.
- Development of NPS control measures datalayer.
- Techniques to link land use patterns with water quality and aquatic habitat condition.
If successful, this framework will be applied to other coastal watersheds throughout the state (Baker per comm 2000).